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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional): 2006_0241A

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)]

on _____

Signature _____

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Application Number	Filed
10/573,568	March 27, 2006

First Named Inventor: Akihiko KUBOTA et al.

Art Unit	Examiner
3746	Philip Earl Stimpert

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

I am the

- ☐ applicant/inventor.
- ☐ assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)
- ☑ attorney or agent of record. Registration number 33,142
- ☐ attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____

/Charles R Watts/
2011.08.01 13:44:34 -04'00'
Signature

Charles R. Watts
Typed or printed name

202-721-8200
Telephone number

August 1, 2011
Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☑ *Total of 1 forms are submitted.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of	:	Attorney Docket No. 2006_0241A
Akihiko KUBOTA et al.	:	**Confirmation No. 4805**
Serial No. 10/573,568	:	Group Art Unit 3746
Filed March 27, 2006	:	Examiner Philip Earl Stimpert
RECIPROCATING COMPRESSOR	:	**Mail Stop: AF**

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In the final Office Action mailed March 31, 2011, items 3 and 4 present a rejection under 35 U.S.C. 112, first paragraph of claims 12 and 13. Claims 12 and 13 were cancelled in an Amendment-After-Final filed July 25, 2011, in order to reduce the issues for appeal.

Prior art rejections are presented in items 5-19 of the final Office Action. The main rejection is presented in items 6-12, and is a rejection of claims 5 and 9-13 under 35 U.S.C. 103(a) as being unpatentable over Oshima et al. (U.S. 5,816,783) in view of Fujikawa et al. (U.S. 4,628,876) and as extrinsically evidenced by Glinsner (U.S. 2004/0211384). The remaining rejections all rely upon the combination of Oshima, Fujikawa and Glinsner as applied to claims 5 and 9-13.

With exemplary reference to the drawing figures, independent claim 5 requires a reciprocating compressor comprising a hermetic container 101, and a compressing element 103 accommodated in the hermetic container, the compressing element including: a crankshaft 107 including a main shaft 109 having a main shaft axis 113 and an eccentric section 110 having an eccentric section axis 110'; a block 115 forming a cylindrical cylinder 114 having a cylinder axis 112; a piston 117 disposed for reciprocation in the cylinder 114; a connecting rod 118 connecting the eccentric section 110 to the piston in such a manner that the connecting rod 118 swings about

the eccentric section axis 110' of the eccentric section 110 upon rotation of the crankshaft 107; a balancing weight 108 for balancing vibrations produced by operation of a combination of the piston 117, the connecting rod 118 and the eccentric section 110, wherein the cylinder 114 is disposed in an offset position such that the cylinder axis 112 does not cross the main shaft axis 113, wherein the crankshaft 107, the piston 117, and the balancing weight 108 are arranged such that, throughout reciprocation of the piston 117 in the cylinder 114, a center of gravity (COG) of the balancing weight 108 is always located at a position ("Center of gravity"; see Fig. 3) substantially opposite to the eccentric section axis 110' with respect to the main shaft axis 113 but deviated, in a rotating direction of the main shaft 109, from a location ("just opposite position"; see Fig. 4) exactly opposite to the eccentric section axis 110' with respect to the main shaft axis 113 such that the center of gravity of the balancing weight 108 trails the eccentric section axis 110' by less than 180° during rotation, and wherein the piston 117, and the balancing weight 108 are arranged such that, when the piston 117 is at a top dead center position (see Fig. 3), the center of gravity of the balancing weight 108 is located in a position that is offset from the cylinder axis 112 but not beyond a plane B that includes the main shaft axis 113 and is parallel with the cylinder axis 112.

Thus, Fig. 3 of the present application shows the location of the center of gravity of the balancing weight 108 in accordance with claim 5. Fig. 4 of the present application illustrates the determination, via testing by the present inventors, that vibrations are reduced in the area between the 0 position (i.e., the "just opposite position") and the plane B (i.e., "not beyond a plane [B] that includes said main shaft axis [113] and is parallel with the cylinder axis [112]", as claimed in claim 5, and "such that said center of gravity of said balancing weight trails said eccentric section axis by less than 180° during rotation", as claimed in claim 5). In other words, Fig. 4 shows the inventors' determination that the COG location between the "just opposite position" and the "plane B" reduces vibrations. Furthermore, Fig. 4 illustrates the inventors' determination that, if the COG is located on the opposite (left) side of the "just opposite position", the vibrations are undersirably increased.

In the prior art rejection, the Examiner admits that: "Oshima et al. do not teach that the balancing weight is deviated from a position exactly opposite the eccentric section axis" (see lines 9 and 10 of item 7 of the Office Action).

Likewise, the Examiner admits that: Fujikawa et al. teach "… a counterbalancing weight having a center of gravity (C_1) that deviates a suitable distance from diametrically opposite the crank pin (15, see col. 4, ln. 48-62)" (see lines 1-4 of page 4 of the Office Action). But, "[n]either Oshima et al. nor Fujikawa et al. teach that the center of gravity of the counterbalancing weight trails the eccentric shaft by less than 180°" (see lines 12 and 13 of page 4 of the Office Action).

However, Fujikawa explicitly teaches (in Fig. 7, column 4, lines 48-62, and claim 2) that the COG is deviated from the "just opposite position" in the opposite rotational direction than the present invention (as claimed in claim 5). In other words, the Fujikawa Fig. 7 arrangement has the COG of the balancing weight in the area to the left of the "just opposite position" of the illustration of present Fig. 4.

That is, as shown in Fig. 7 and described at column 4, lines 48-62, "the position of the COG C_1 of the counter balancer deviates a suitable distance $d\theta$ from a position B_1, which has a phase difference of 180 degrees with respect to the crank pin 15 [i.e., B_1 corresponding to the "just opposite position" of the present application] to a position which is located posterior to the position B_1 with respect to the direction of rotation A1 of the crank shaft" (note that rotation direction A1 in Fig. 7 of Fujikawa is counterclockwise, whereas the rotation direction in Fig. 3 of the present application is clockwise).

Fujikawa states the importance of this arrangement at column 5, lines 1-7 and column 5, lines 18-32. That is, according to Fujikawa, the deviated COG of Fig. 7 of Fujikawa is effective to greatly reduce the rotational vibromotive force M_2 produced about the crankshaft "in the same manner as described referring Fig. 3" (of Fujikawa), wherein the COG (C_1) is shown in the "just opposite position", (i.e., not deviated from the "just opposite position"). Furthermore, according to Fujikawa, "this arrangement [i.e., the Fig. 7 arrangement] greatly reduces the vibromotive force FX acting in the direction of the center line of the cylinder as compared with the vibromotive force FX acting in a system shown in Fig. 3."

Accordingly, Fujikawa clearly teaches an importance to deviating the COG of the counterbalance in the direction that would be illustrated to the left of the "just opposite position" in present Fig. 4, and therefore, teaches away from deviating the COG of the counter balancer in the direction that would be to the right of the "just opposite position" in Fig. 4 of the present application.

Thus, Fujikawa teaches clearly that, if deviating the counter balancer COG from the "just opposite position", the deviation is done in the direction that is to the left of the "just opposite position" in Fig. 4 of the present application, so as to attain the benefit described above and at column 5, lines 1-7 and column 5, lines 18-32.

Therefore, a person having ordinary skill in the art would not have modified Oshima in view of Fujikawa to have the COG deviated in the manner required by claim 5 (i.e., to the right of the "just opposite position" in present Fig. 4, but not beyond the plane B).

The Examiner cited the Glinsner publication for teaching

> *"that the angular positions, masses and center of gravity of all of these elements [i.e., the piston (50), connecting rod (80), eccentric shaft section (20) and counter weight (120)] may be optimized through routine experimentation or calculation in order to minimize vibrations in the engine (see paragraph 32), i.e. to minimize vibrations in the installation as a whole."*

Glinsner does not teach, and the Examiner does not assert that Glinsner teaches, that the COG should be deviated as required by present claim 5, but rather merely includes, according to the Examiner, a general teaching of optimizing "angular positions, masses and center of gravity of all of these elements through routine experimentation or calculation in order to minimize vibrations in the engine … and in the installation as a whole."

However, assuming a*rguendo* that the Examiner's assertion as to the teaching of the Glinsner reference is correct, this general teaching to "optimize" these variables would clearly not have caused a person having ordinary skill in the art to go against the "teaching away" of the Fujikawa reference and locate the COG of the counter balancer in the location required by claim 5 which is the opposite deviation direction (i.e., to the right of the "just opposite position" in present Fig. 4) with respect to the deviation direction of the Fujikawa reference (i.e., to the left of the "just opposite position" shown in present Fig. 4).

To summarize the above arguments:

(1) Oshima does not teach deviation of the counter balancer COG from the "just opposite position" of present Fig. 4;

(2) Fujikawa explicitly teaches that advantageous effects are provided by deviating the counter balancer COG to the left in Fig. 4 (i.e., the minus direction) of the "just opposite position" of present Fig. 4; and

(3) Glinsner provides a general teaching of optimizing "angular positions, masses and center of gravity … to minimize vibrations in the installation as a whole", according to the Examiner;

(4) thus, there is no teaching in the prior art references of the deviation of the COG as recited in the present claim 5, where the COG is deviated to the right of the "just opposite position" shown in present Fig. 4 (i.e., the plus direction), and Fujikawa teaches away from the deviation to the right of the "just opposite position" in Fig. 4; and

(5) therefore, a person having ordinary skill in the art would not have found the deviation of the counter balancer COG to the right in Fig. 4 to be obvious from the applied prior art.

Thus, because there is no teaching whatsoever in the applied prior art of a deviation of the balancing weight COG in the direction required by present claim 5, and because Fujikawa teaches that a deviation should be in the opposite direction to that of the present invention thereby teaching away from COG deviation according to the present invention, it is respectfully submitted that claim 5, as well as the claims depending therefrom, are clearly allowable over the applied prior art. Therefore, withdrawal of the final rejections is respectfully requested.

Respectfully submitted,

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